

Application No. 09661633
Amendment dated July 16, 2004
Reply to Office Action of March 17, 2004

REMARKS

Applicant gratefully acknowledges the allowance of claims 15 through 20.

Claims 5, 8, 9, 12, 24, 25, 30, 32 through 36, 38, 43, 46 through 51, 55 through 57 and 61 have been rewritten as independent claims, if necessary, or have been amended so as to depend from a rewritten independent claim in order to remove the objections noted by the Examiner. Therefore, these claims in their present form should be allowable.

Claims 18 and 49 have been amended to remove an extraneous mark in the formula. The formula now corresponds to the specification. Claim 51 now contains the formula missing in the original claim.

Claims 1 through 4, 6, 7, 10, 11, 13, 14, 21 through 23, 26 through 29, 31, 33, 37, 39 through 42, 44, 45, 53, 54 and 58 through 60 were rejected.

Claim 37 has been rewritten to incorporate the limitations of claim 38 which was indicated as objected to. Claim 38 has now been canceled. Thus, claim 37 in its current form should be allowable.

The rejection of claim 10 based upon Jacquin '803 is respectfully traversed. Claim 10 requires that the fitting of the candidate facial regions be done within the difference image. Jacquin's "fitting steps" are performed on a search region within "a subsequent frame of video." While applicant does not concede that Jacquin's "fitness metric" is based upon a combination of at least two factors that correspond to the fit, location and size factors of claim 10, the issue is moot because in claim 10 candidate facial regions are searched within the difference image, not in an image frame of ordinary video as taught by Jacquin. Thus, the rejection of claim 10 based on

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§ 102 should be withdrawn.

The rejections of claims 21, 22, 23, 26 through 29, 31, 33, 37, 53, 54 and 58 through 60 in view of Ryoo are respectfully traversed.

First regarding claim 37, this claim has been amended to incorporate the limitations of claim 38. Claim 38 was objected to and amended claim 37 should now be deemed allowable.

Regarding claims 21 through 23 and 26 through 29, these claims call for "calculating sensitivity information ... based upon the sensitivity of a human visual system of a viewer perceiving image data at eccentric visual angles" No such element is present in Ryoo. At column 5, line 45, Ryoo identifies a complexity classifier 21 which classifies each macro block by its complexity. Ryoo does not suggest that complexity information be based upon a human sensitivity model perceiving image detail at eccentric angles to a particular region of the frame of video. Ryoo does not address or recognize that the human visual system's sensitivity to image detail depends upon the viewing angle. The rejection should be withdrawn.

Claims 1, 4, 6 and 10 were rejected under § 103 as obvious over Jacquin in view of McLaughlin. This rejection is respectfully traversed. As pointed out in connection with the § 102 rejection based upon Jacquin, there is no teaching in Jacquin that candidate facial regions are determined within a difference image. Further, claims 1 and 10 require a transform of the difference image in a spatial domain to a parameter space. The Examiner is of the view that it would have been obvious to incorporate the teaching of McLaughlin into Jacquin so that candidate facial regions are determined by a Hough transform to a parameter space but there is no suggestion in Jacquin of the desirability of using a Hough transform operating on the difference image. Jacquin combines a decimated motion image with a decimated edge image and then removes background. These steps obviate the need for a transformation to a parameter space.

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The "ellipse finder" 44 of Fig. 2 operates on video that has been transformed so that ellipses are easily identifiable. It would run counter to Jacquin's method of operation to do away with all these steps and use a Hough transform instead. There is no recognition that such a step would be consonant with Jacquin's methodology. By contrast, claim 1 requires that the Hough transform be employed on the difference image, something Jacquin does not suggest. Claims 4 and 6 are dependent upon claim 1. The rejection should be withdrawn.

In addition, the Examiner rejects claims 2 and 3 further in view of Sexton. Sexton employs a completely different method from Jacquin. In Sexton, the thresholds are set to remove noise and some moving areas (column 3, lines 2-3). A completely different method is employed in Jacquin. Jacquin employs different processing to find ellipses that fit and nothing in Sexton or Jacquin suggest that Sexton's thresholding step would be of any value in Jacquin's process. The rejection should be withdrawn.

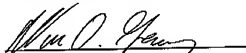
Claims 7 and 14 were rejected over Jacquin in view of the pixel reduction step of Eleftheriades. This rejection is respectfully traversed. The Examiner's assertion that it would have been obvious to include the pixel reduction of Eleftheriades prior to the calculation of the difference image in Jacquin is in error. The differencing step 20 in Fig. 1 of Jacquin is for the purpose of producing a globally motion-compensated image. The motion estimator operates on entire frames of video to produce a compensator that operates on the current image prior to differencing. The motion compensator data would be wasted on reduced pixel images because their resolution would be much lower and the compensator would not function properly to achieve the output of a globally motion-compensated difference image. Further, Jacquin shows decimation of this image subsequent to the differencing step. Had Eleftheriades' pixel reduction step been obvious, Jacquin would have incorporated decimation at block 22 prior to differencing, not afterwards. The rejection of claims 7 and 14 should therefore be withdrawn.

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The rejections under § 103 of claims 39, 40, 42, 44 and 45 are believed to be moot in view of the amendment of claim 37. Claim 37 now includes the limitations of claim 38. Claim 38 contains elements not found in any of the cited references including the calculation of sensitivity values based upon a non-temporal location and size of the facial region and a non-linear model of the human visual system's ability to perceive image detail at eccentric angles.

The claims as amended are believed to be patentable over the references of record and claims previously objected to have been rewritten in allowable format. Applicant respectfully requests that the case be passed to issue.

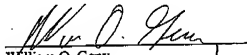
Respectfully submitted,


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CERTIFICATE OF MAILING

I hereby certify that this Response/Amendment is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents, P. O. Box 1450, Alexandria, Virginia 22313-1450 on July 16, 2004.

Dated: July 16, 2004


William O. Geny